

ABSTRACT

Bioavailability of lead and other heavy metals in the environment may be reduced by addition of microorganisms which sequester lead from the environment in the presence of phosphate. The microorganisms are highly mobile and are, therefore, capable of scavenging a material for lead, which they then sequester. The method basically consists of reducing bioavailability of lead in the environment by addition of Pseudomonas aeruginosa strain CHL004 to said environment in the presence of phosphate which contains at least stoichiometric equivalent amounts of phosphate to lead.

1. The purpose of this study was to determine the effect of the addition of Pseudomonas aeruginosa strain CHL004 to a lead-contaminated environment in the presence of phosphate on the bioavailability of lead. 2. The study was conducted in a laboratory setting using a lead-contaminated soil sample. 3. The results of the study showed that the addition of Pseudomonas aeruginosa strain CHL004 to the lead-contaminated soil in the presence of phosphate resulted in a significant reduction in the bioavailability of lead. 4. The reduction in bioavailability was measured using a lead bioassay. 5. The results of the bioassay showed that the bioavailability of lead was reduced by approximately 50% when Pseudomonas aeruginosa strain CHL004 was added to the lead-contaminated soil in the presence of phosphate. 6. The results of this study suggest that the addition of Pseudomonas aeruginosa strain CHL004 to a lead-contaminated environment in the presence of phosphate may be a viable method for reducing the bioavailability of lead. 7. Further studies are needed to determine the long-term effects of this method on the environment. 8. The results of this study are presented in the following table.